Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims:

1. (currently amended) A computer employed ~~processor-based~~ method for evolving a graphs structure comprising determining a genome representation for evolving a set of weights for a set of arcs in the graph structure such that the arcs that participate in a substructure of the graph structure are in a close proximity in the genome representation.

2. (previously presented) The method of claim 1, further comprising evolving the weights using the genome representation.

3. (previously presented) The method of claim 1, wherein determining a genome representation comprises determining a matrix which indicates an optimal arrangement of the weights in the genome representation in response to the interconnections among a set of nodes and the arcs of the graph structure.

4. (currently amended) The method of claim 3, wherein determining a matrix comprises:

determining a connection matrix which indicates interconnections among the nodes and the arcs;

determining a weight matrix which indicates an amount by which each element of the weight matrix is off a diagonal; and

determining a product matrix of the connection matrix and the weight matrix.

5. (previously presented) The method of claim 4, wherein determining a matrix further comprises determining a score by summing a set of elements of the product matrix.

6. (previously presented) The method of claim 5, further comprising minimizing the score by swapping one or more rows and columns of the matrix.

7. (original) The method of claim 1, wherein the graph structure is a neural network.

8. (currently amended) A computer employed method, ~~processor-based method for deriving a genome representation for evolving a set of weights in a graph structure,~~ comprising:

deriving a genome representation for evolving a set of weights in a graph structure by:

determining a substructure of the graph structure; and

determining an arrangement in the genome representation such that the weights that participate in the substructure are in a close proximity in the genome representation.

9. (previously presented) The method of claim 8, wherein determining an arrangement comprises determining a matrix which indicates an optimal arrangement of the weights in the genome representation in response to the interconnections among a set of nodes and the arcs of the graph structure.

10. (currently amended) The method of claim 9, wherein determining a matrix comprises:

determining a connection matrix which indicates interconnections among the nodes and the arcs;

determining a weight matrix which indicates an amount by which each element of the weight matrix is off a diagonal; and

determining a product matrix of the connection matrix and the weight matrix.

11. (previously presented) The method of claim 10, wherein determining a matrix further comprises determining a score by summing a set of elements of the product matrix.

12. (previously presented) The method of claim 11, further comprising minimizing score by swapping one or more rows and columns of the matrix.

13. (original) The method of claim 8, wherein the graph structure is a neural network.

14. (previously presented) A computer-readable storage media that holds a program that when executed evolves a graph structure by determining a genome representation for evolving a set of weights for a set of arcs in the graph structure such that the arcs that participate in a substructure of the graph structure are in a close proximity in the genome representation.

15. (previously presented) The computer-readable storage media of claim 14, wherein determining a genome representation comprises determining a matrix which indicates an optimal arrangement of the weights in the genome representation in response to the interconnections among a set of nodes and the arcs of the graph structure.

16. (currently amended) The computer-readable storage media of claim 15, wherein determining a matrix comprises:

determining a connection matrix which indicates interconnections among the nodes and the arcs;

determining a weight matrix which indicates an amount by which each element of the weight matrix is off a diagonal; and

determining a product matrix of the connection matrix and the weight matrix.

17. (previously presented) The computer-readable storage media of claim 16, wherein determining a matrix further comprises determining a score by summing a set of elements of the product matrix.

18. (previously presented) The computer-readable storage media of claim 17, further comprising minimizing the score by swapping one or more rows and columns of the matrix.

19. (previously presented) The computer-readable storage media of claim 14, wherein the graph structure is a neural network.

20. (currently amended) A computer-readable storage media that holds a program that when executed derives a genome representation for evolving a set of weights in a graph structure by:

determining a substructure of the graph structure; and

determining an arrangement in the genome representation such that the weights that participate in the substructure are in a close proximity in the genome representation.

21. (previously presented) The computer-readable storage media of claim 20, wherein determining an arrangement comprises determining a matrix which indicates an optimal arrangement of the weights in the genome representation in response to the interconnections among a set of nodes and the arcs of the graph structure.

22. (currently amended) The computer-readable storage media of claim 21, wherein determining a matrix comprises:

determining a connection matrix which indicates interconnections among the nodes and the arcs;

determining a weight matrix which indicates an amount by which each element of the weight matrix is off a diagonal; and

determining a product matrix of the connection matrix and the weight matrix.

23. (previously presented) The computer-readable storage media of claim 22, wherein determining a matrix further comprises determining a score by summing a set of elements of the product matrix.

24. (previously presented) The computer-readable storage media of claim 23, further comprising minimizing score by swapping one or more rows and columns of the matrix.

25. (previously presented) The computer-readable storage media of claim 20, wherein the graph structure is a neural network.

26. (currently amended) A computer employed ~~processor based~~ method for designing a neural network, comprising:

determining a genome representation for a set of weights for a graph structure representing the neural network such that a set of arcs of the graph structure that participate in a substructure of the graph structure are in a close proximity in the genome representation; and

evolving the weights using the genome representation.

27. (previously presented) The method of claim 26, wherein determining a genome representation comprises determining a matrix which indicates an optimal arrangement of the weights in the genome representation in response to the interconnections among a set of nodes and the arcs of the graph structure.

28. (currently amended) The method of claim 27, wherein determining a matrix comprises:

determining a connection matrix which indicates interconnections among the nodes and the arcs;

determining a weight matrix which indicates an amount by which each element of the weight matrix is off a diagonal; and

determining a product matrix of the connection matrix and the weight matrix.

29. (previously presented) The method of claim 28, wherein determining a matrix further comprises determining a score by summing a set of elements of the product matrix.

30. (previously presented) The method of claim 29, further comprising minimizing the score by swapping one or more rows and columns of the matrix.